# Service Schematics

## Introduction







**Important:**

**This document is intended for use by authorized service centers only.**

“Service Schematics“ was created with focus on customer care.
The purpose of this document is to provide further technical repair information for NOKIA mobile phones on Level 3/4 service activities.
It contains additional information such as e.g. “Component finder”, “Frequency band table” or “Antenna switch table”.
The “Signal overview” page gives a good and fast overview about the most important signals and voltages on board.
Saving process time and improving the repair quality is the aim of this document.
It is to be used additionaly to the service manual and other training or service information such as Service Bulletins.

All measurements were made using following equipment:

| | | |
|---|---|---|
| Nokia repair SW | : | Phoenix version 2006.34.2.156 |
| Oscilloscope | : | Fluke PM 3380A/B |
| Spectrum Analyzer | : | Advanced R3162 with an analog probe |
| RF-Generator/GSM Tester | : | Rhode & Schwarz CMU 200 |
| Multimeter | : | Fluke 73 Series II |

While every endeavour has been made to ensure the accuracy of this document, some errors may exist. If the reader finds any errors, NOKIA should be notified in writing.

Please send E-Mail to: **training.sace@nokia.com**

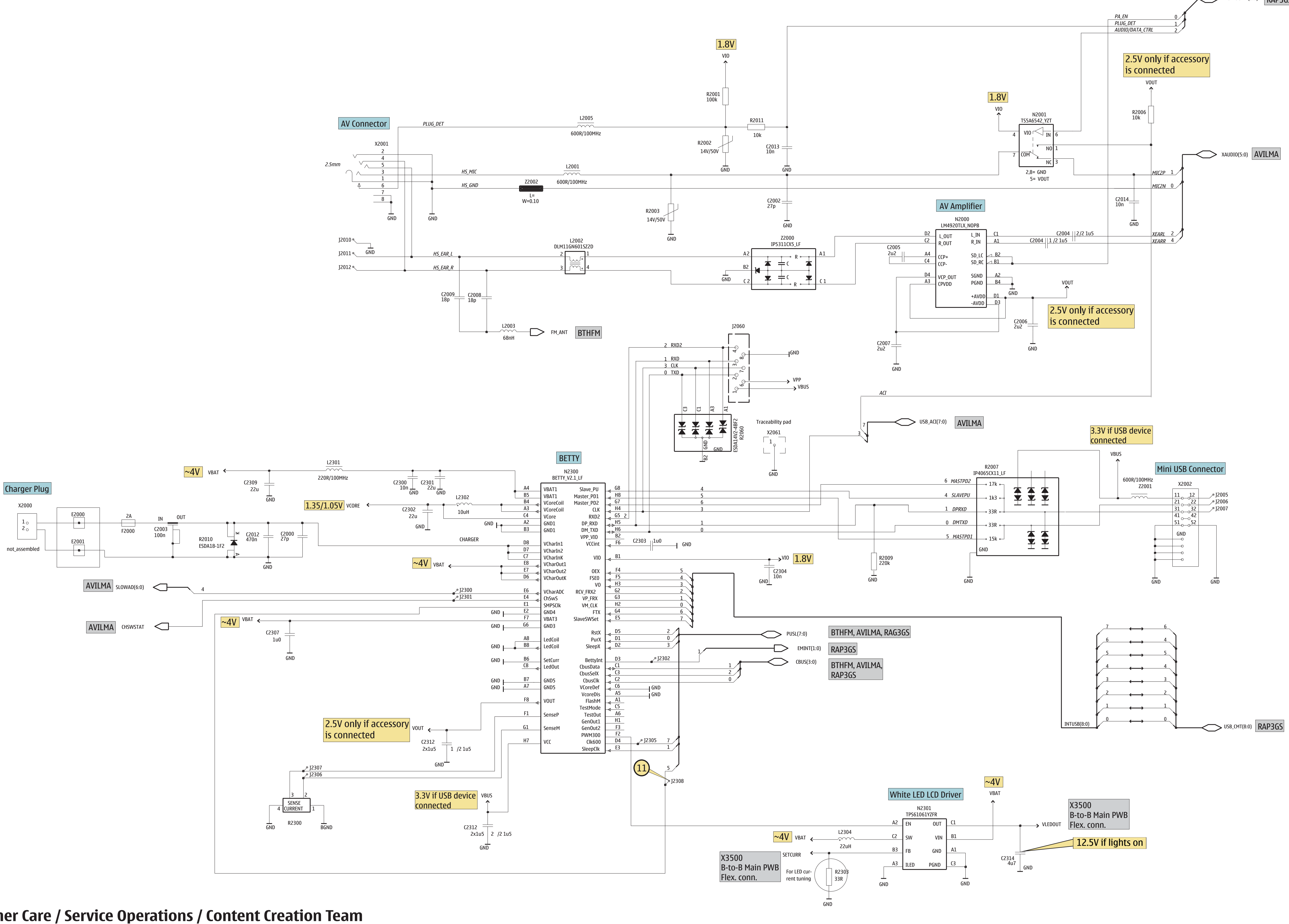



**A NEW FEATURE FOR ON-LINE USE**

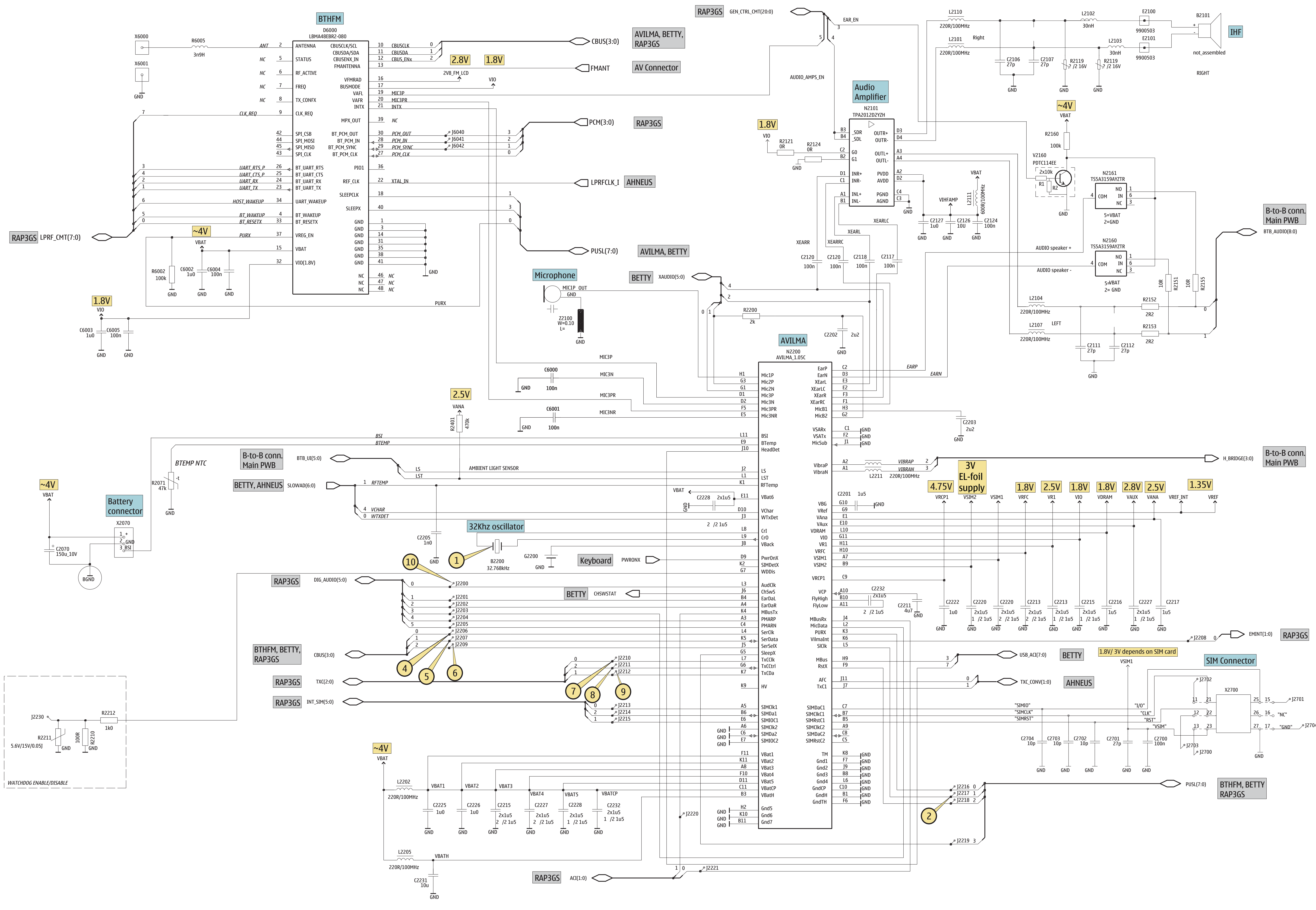
We have now linked those measurement points , which are related to the oscillograms shown on the signal overview page. As example: clicking on the measurement point guides you to the matching oscillogram on the signal overview page. The next click onto the now shown signal guides you to the related measurem-nt point on the module. Finally, a third click , now onto the measurement point on the module, takes you back to the starting point inside the schematics.

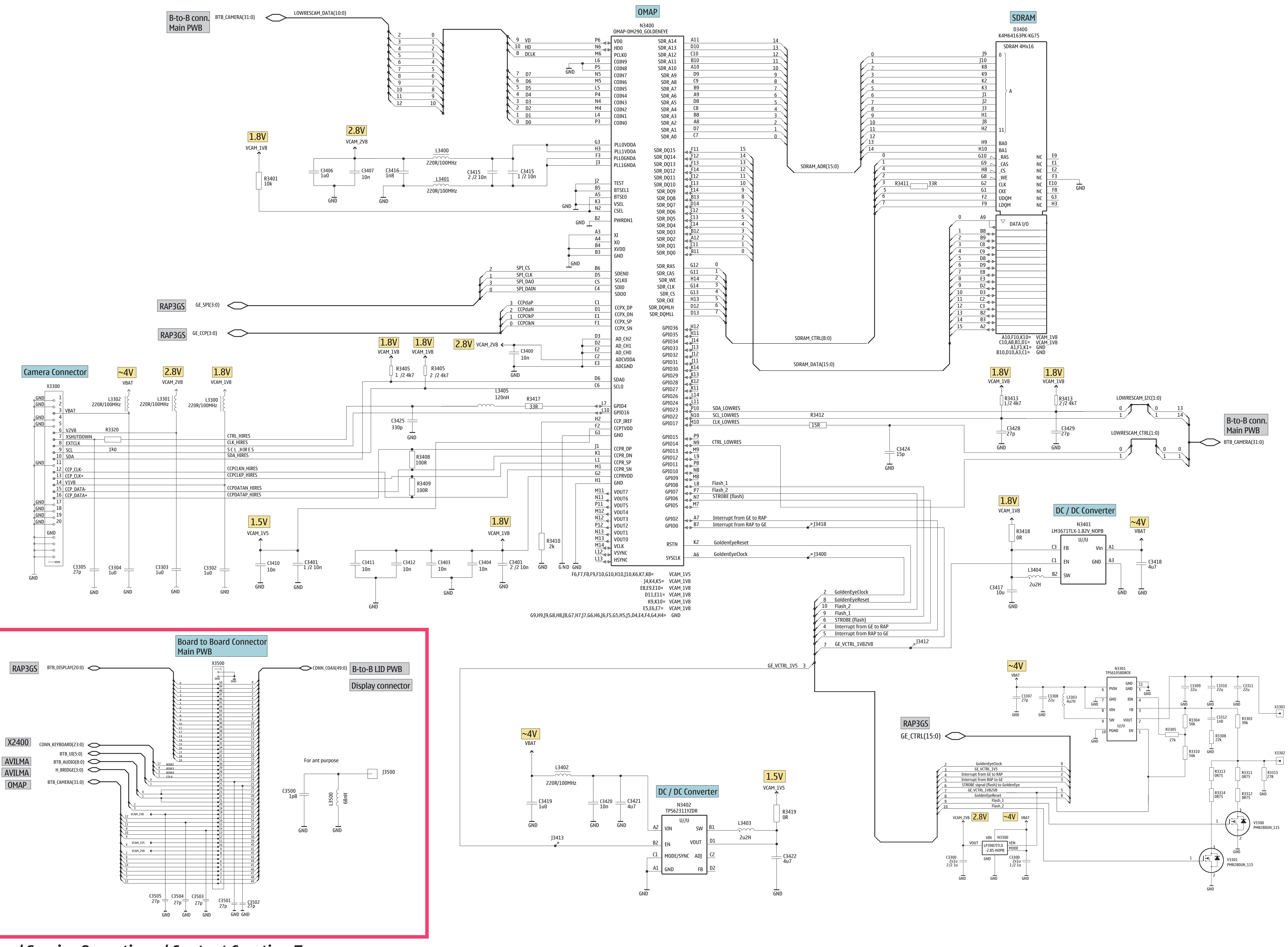
Do you have further improvement ideas or would like to give us feedback?
Please send an email to: training.sace@nokia.com

Table of contents

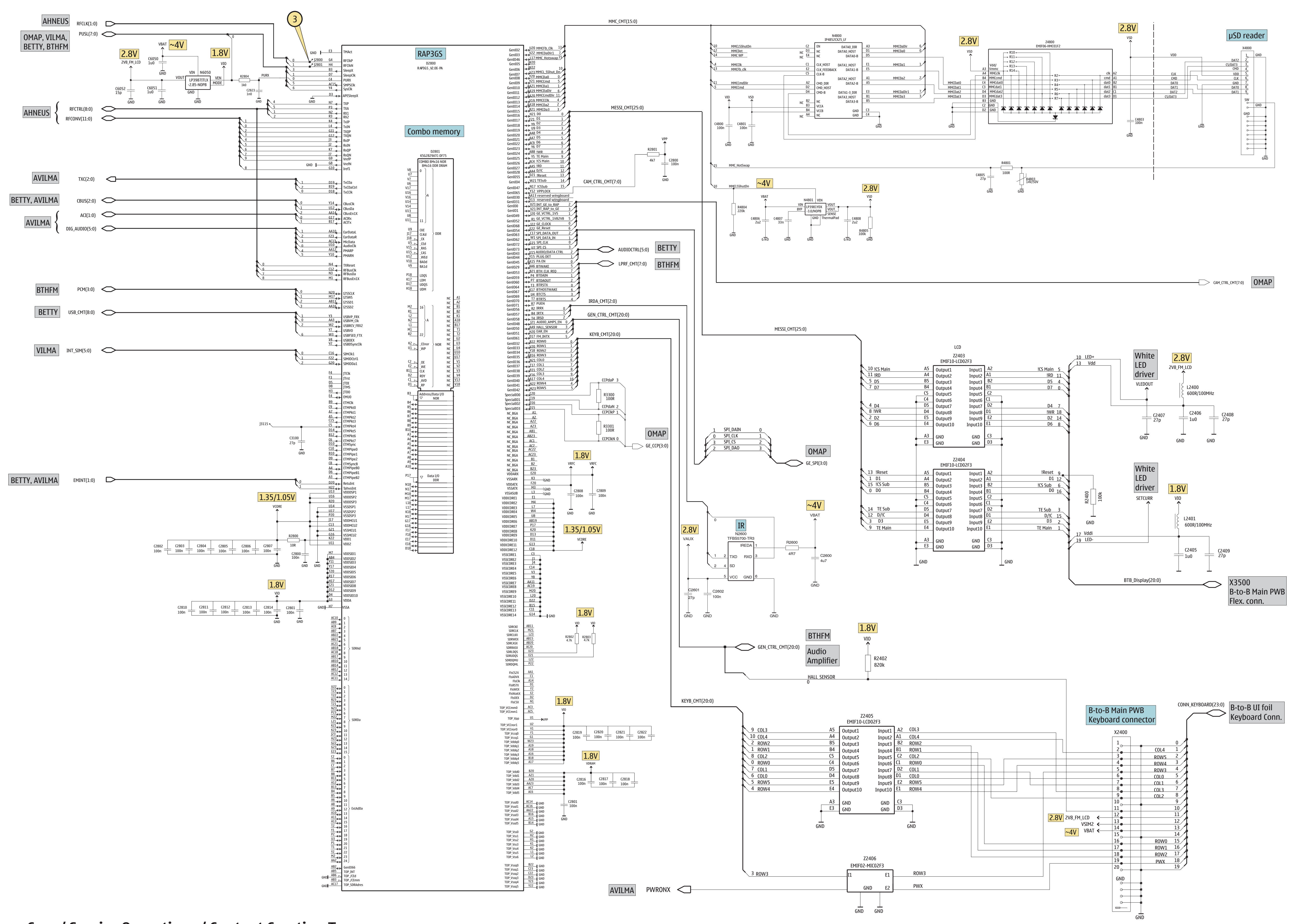


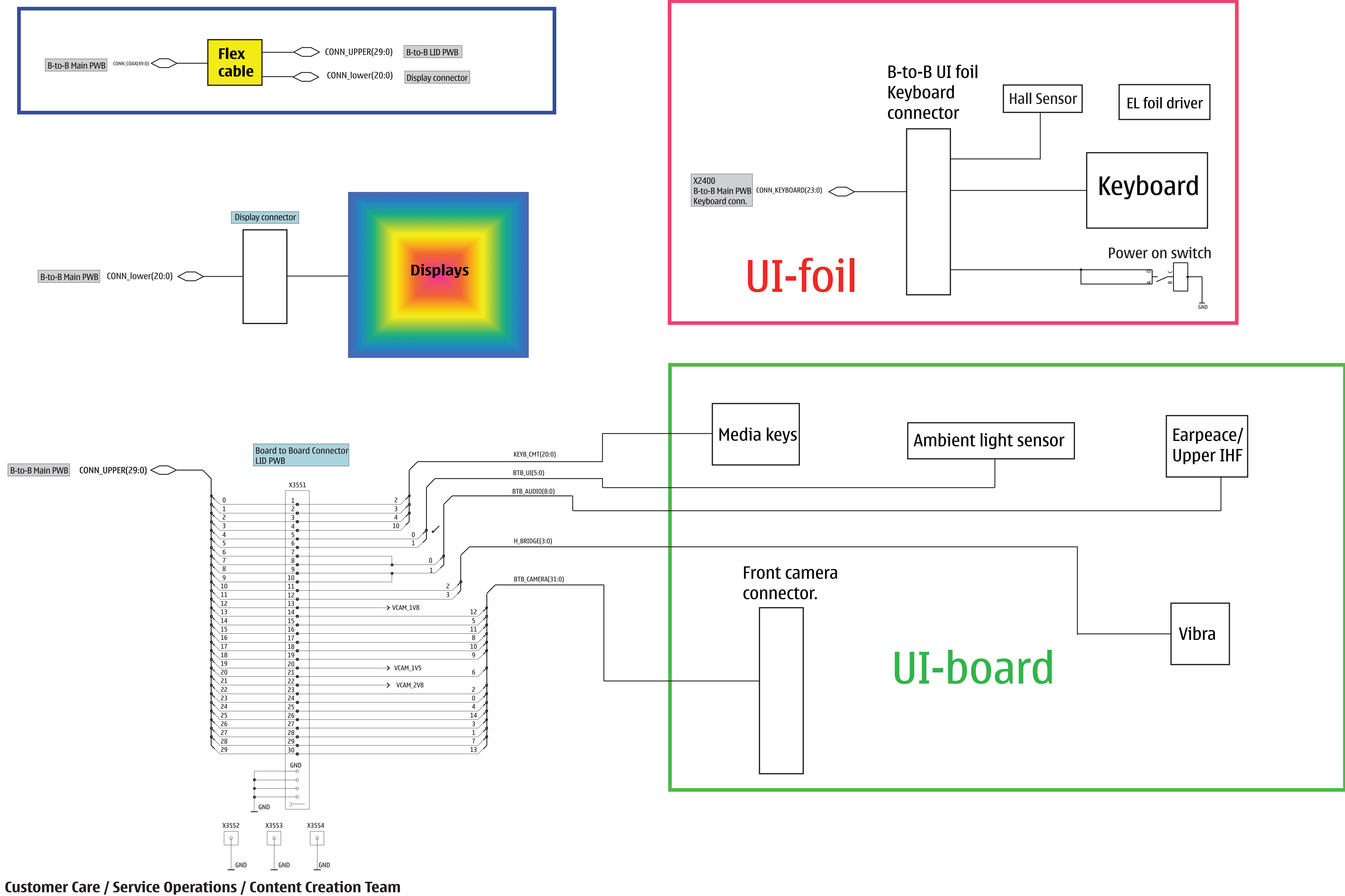
AV Connector
2.5mm
X2001
PLUG_DET
HS_MIC
HS_GND
HS_EAR_L
HS_EAR_R
1.8V
VIO
R2001
100k
R2002
14V/50V
R2011
10k
C2013
10n
L2005
600R/100MHz
L2001
600R/100MHz
Z2002
L=
W=0.10
R2003
14V/50V
C2002
27p
L2002
DLM11GN601SZ2D
Z2000
IP5311CX5_LF
C2009
18p
C2008
18p
L2003
68nH
FM_ANT
BTHFM
J2010
J2011
J2012
GND
AV Amplifier
N2000
LM4920TLX_NOPB
C2005
2u2
C2006
2u2
C2007
2u2
C2004
2/2 1u5
1/2 1u5
VOUT
2.5V only if accessory
is connected
N2001
TS5A6542_YZT
R2006
10k
C2014
10n
AUDIOCTRL(5:0)
RAP3GS
PA_EN
PLUG_DET
AUDIO/DATA_CTRL
XAUDIO(5:0)
AVILMA
MIC2P
MIC2N
XEARL
XEARR
2,8= GND
5= VOUT
J2060
RXD2
RXD
CLK
TXD
VPP
VBUS
ESDA14V2-4BF2
R2060
Traceability pad
X2061
ACI
USB_ACI(7:0)
3.3V if USB device
connected
Mini USB Connector
R2007
IP4065CX11_LF
MASTPD2
SLAVEPU
DPRXD
DMTXD
MASTPD1
17k
1k3
33R
33R
15k
R2009
220k
Z2001
600R/100MHz
X2002
J2005
J2006
J2007
Charger Plug
X2000
not_assembled
F2000
2A
E2000
E2001
C2003
100n
R2010
ESDA18-1F2
C2012
470n
C2000
27p
CHARGER
~4V
VBAT
L2301
220R/100MHz
C2309
22u
C2300
10n
C2301
22u
1.35/1.05V
VCORE
C2302
22u
L2302
10uH
BETTY
N2300
BETTY_V2.1_LF
C2303
1u0
C2304
10n
SLOWAD(6:0)
CHSWSTAT
J2300
J2301
C2307
1u0
PUSL(7:0)
BTHFM, AVILMA, RAG3GS
EMINT(1:0)
CBUS(3:0)
BTHFM, AVILMA,
RAP3GS
J2302
J2305
J2306
J2307
J2308
11
C2312
2x1u5
1/2 1u5
2/2 1u5
SENSE CURRENT
R2300
BGND
INTUSB(8:0)
USB_CMT(8:0)
White LED LCD Driver
N2301
TPS61061YZFR
L2304
22uH
VLEDOUT
SETCURR
For LED current tuning
R2303
33R
C2314
4u7
X3500
B-to-B Main PWB
Flex. conn.
12.5V if lights on

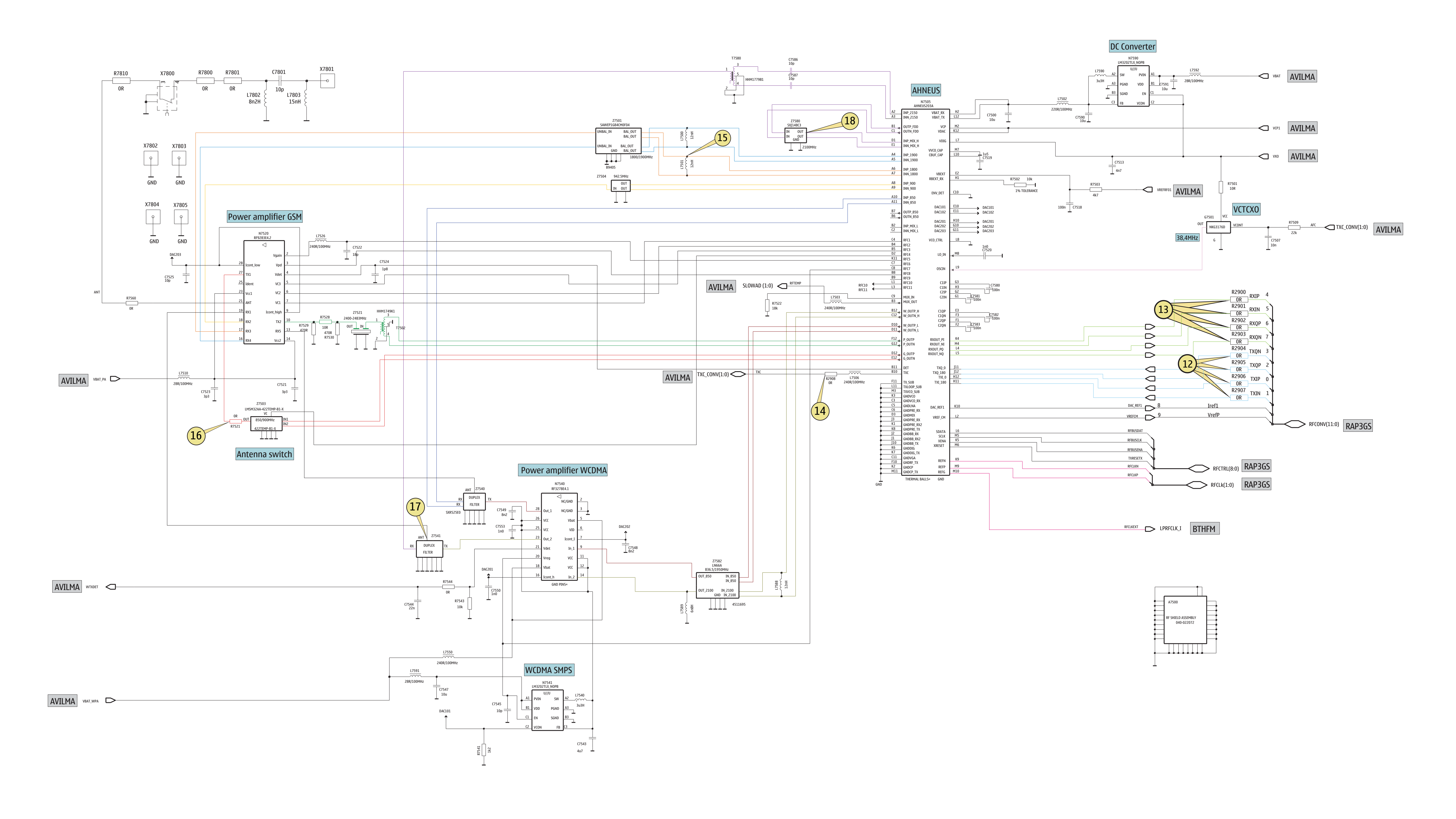

BTHFM
D6000
LBMA48EBR2-080
CBUS(3:0)
AVILMA, BETTY, RAP3GS
2.8V
1.8V
FMANT
AV Connector
PCM(3:0)
RAP3GS
LPRFCLK_I
AHNEUS
PUSL(7:0)
AVILMA, BETTY
RAP3GS
LPRF_CMT(7:0)
~4V
1.8V
RAP3GS
GEN_CTRL_CMT(20:0)
EAR_EN
AUDIO_AMPS_EN
Audio Amplifier
N2101
TPA2012D2YZH
IHF
B2101
not_assembled
RIGHT
~4V
VBAT
N2161
TS5A3159AYZTR
N2160
TS5A3159AYZTR
B-to-B conn. Main PWB
BTB_AUDIO(8:0)
Microphone
BETTY
XAUDIO(5:0)
AVILMA
N2200
AVILMA_1.05C
2.5V
VANA
B-to-B conn. Main PWB
BTB_UI(5:0)
AMBIENT LIGHT SENSOR
BETTY, AHNEUS
SLOWAD(6:0)
BTEMP NTC
~4V
Battery connector
X2070
32Khz oscillator
B2200
32.768kHz
Keyboard
PWRONX
RAP3GS
DIG_AUDIO(5:0)
BETTY
CHSWSTAT
BTHFM, BETTY, RAP3GS
CBUS(3:0)
RAP3GS
TXC(2:0)
RAP3GS
INT_SIM(5:0)
WATCHDOG ENABLE/DISABLE
~4V
VBAT
RAP3GS
ACI(1:0)
B-to-B conn. Main PWB
H_BRIDGE(3:0)
4.75V
3V EL-foil supply
1.8V
2.5V
1.8V
1.8V
2.8V
2.5V
1.35V
RAP3GS
EMINT(1:0)
BETTY
USB_ACI(7:0)
1.8V/ 3V depends on SIM card
SIM Connector
X2700
AHNEUS
TXC_CONV(1:0)
BTHFM, BETTY RAP3GS
PUSL(7:0)
1
2
4
5
6
7
8
9
10

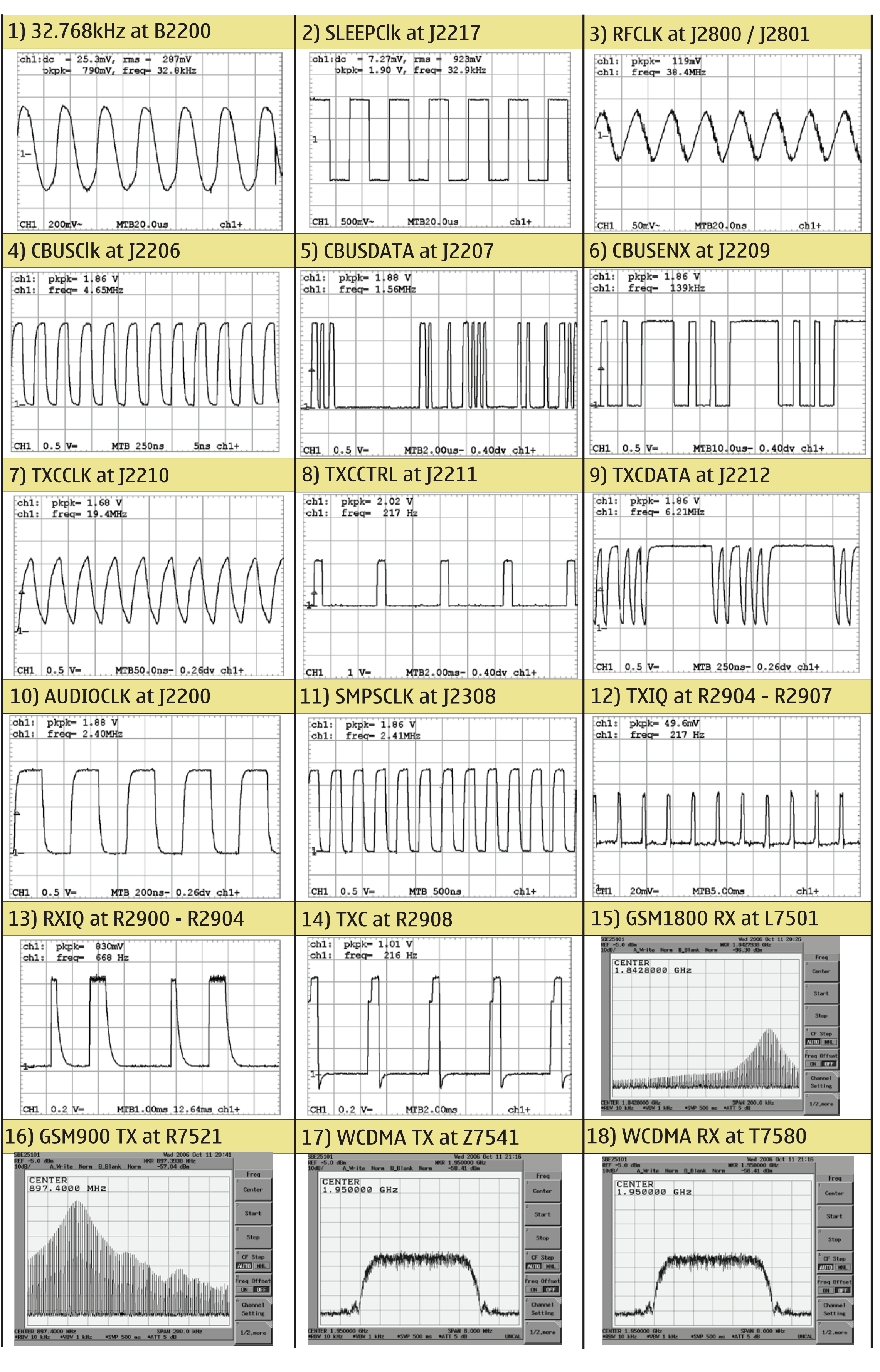


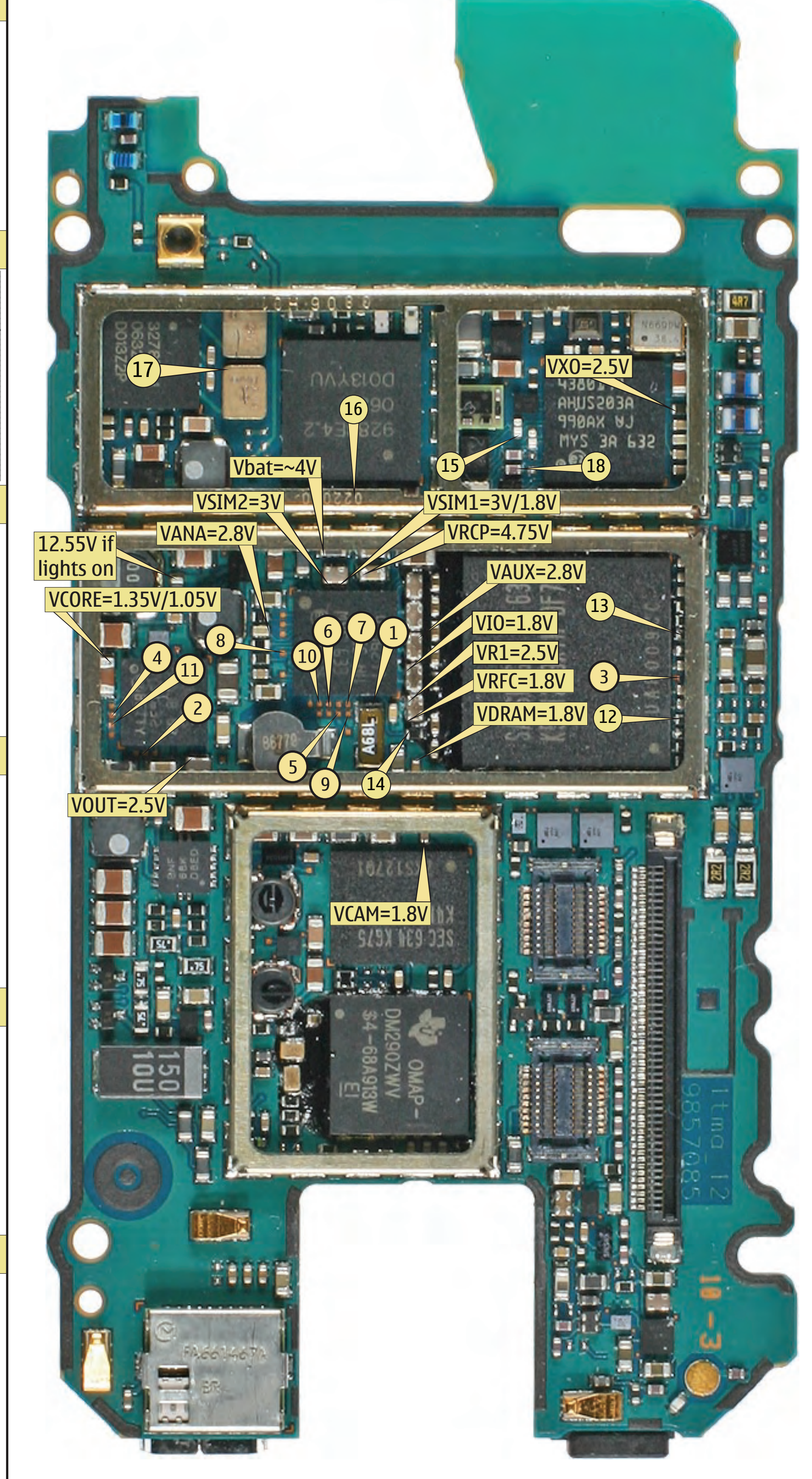
B-to-B conn.
Main PWB
OMAP
N3400
OMAP-DM290_GOLDENEYE
SDRAM
D3400
K4M64163PK-KG75
SDRAM 4Mx16
1.8V
2.8V
RAP3GS
GE_SPI(3:0)
GE_CCP(3:0)
Camera Connector
X3300
~4V
1.5V
SDRAM_ADR(15:0)
SDRAM_CTRL(8:0)
SDRAM_DATA(15:0)
LOWRESCAM_I2C(1:0)
LOWRESCAM_CTRL(1:0)
BTB_CAMERA(31:0)
DC / DC Converter
N3401
LM3671TLX-1.82V_NOPB
Board to Board Connector
Main PWB
X3500
B-to-B LID PWB
Display connector
X2400
AVILMA
For ant purpose
J3500
N3402
TPS62311YZDR
GE_CTRL(15:0)
N3301
TPS61058DRCR
V3300
V3301

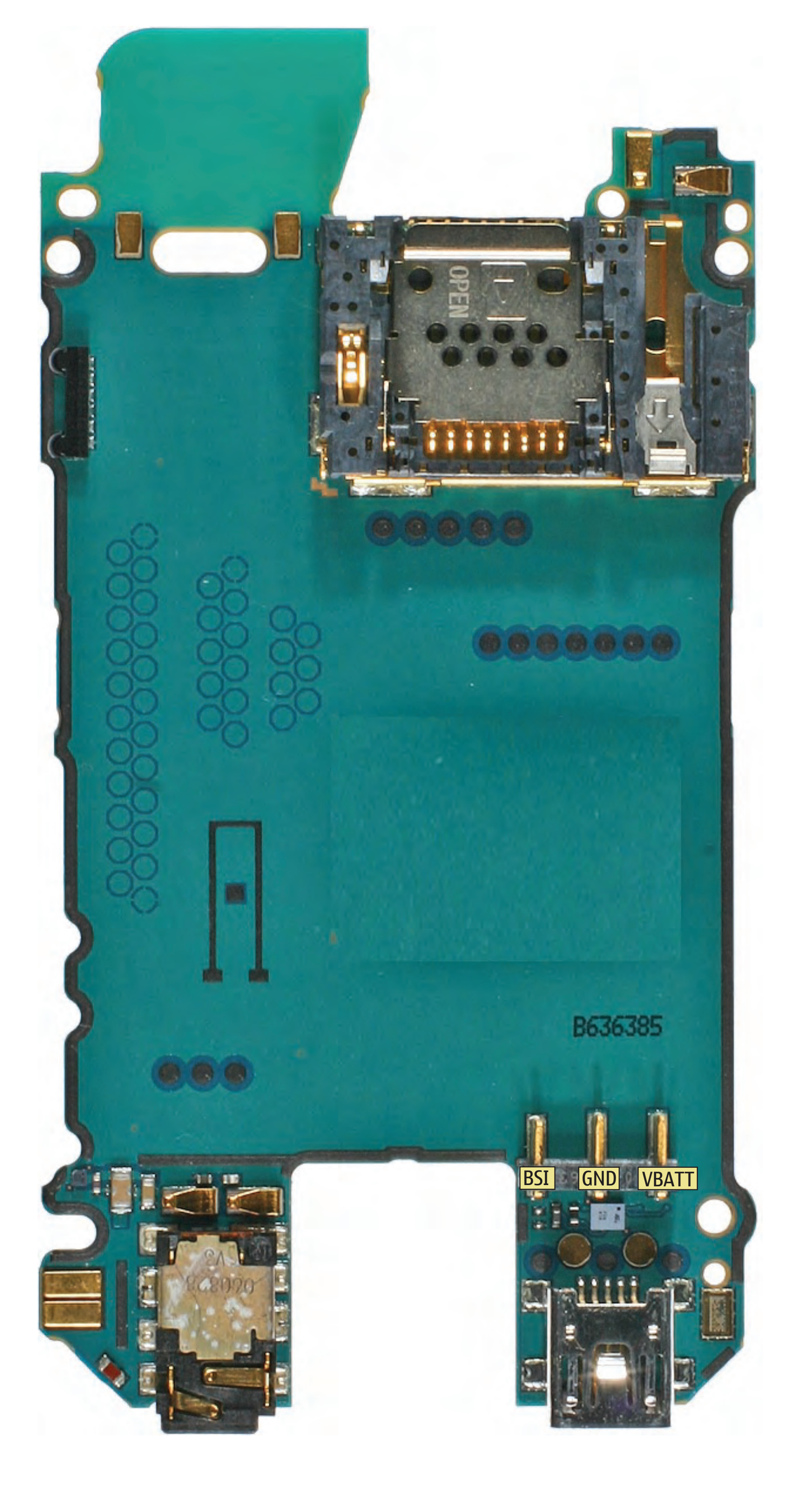

AHNEUS
RFCLK(1:0)
OMAP, VILMA, BETTY, BTHFM
PUSL(7:0)
2.8V
~4V
1.8V
RAP3GS
Combo memory
AHNEUS
RFCTRL(8:0)
RFCONV(11:0)
AVILMA
TXC(2:0)
BETTY, AVILMA
CBUS(2:0)
AVILMA
ACI(1:0)
DIG_AUDIO(5:0)
BTHFM
PCM(3:0)
BETTY
USB_CMT(8:0)
VILMA
INT_SIM(5:0)
BETTY, AVILMA
EMINT(1:0)
1.35/1.05V
1.8V
MMC_CMT(15:0)
MESSI_CMT(25:0)
CAM_CTRL_CMT(7:0)
2.8V
µSD reader
~4V
2.8V
BETTY
AUDIOCTRL(5:0)
BTHFM
LPRF_CMT(7:0)
OMAP
CAM_CTRL_CMT(7:0)
IRDA_CMT(2:0)
GEN_CTRL_CMT(20:0)
KEYB_CMT(20:0)
MESSI_CMT(25:0)
LCD
White LED driver
2.8V
OMAP
GE_CCP(3:0)
OMAP
GE_SPI(3:0)
1.8V
1.35/1.05V
IR
~4V
2.8V
White LED driver
1.8V
X3500
B-to-B Main PWB Flex. conn.
BTB_Display(20:0)
1.8V
BTHFM
Audio Amplifier
GEN_CTRL_CMT(20:0)
1.8V
HALL_SENSOR
1.8V
1.8V
KEYB_CMT(20:0)
B-to-B Main PWB Keyboard connector
CONN_KEYBOARD(23:0)
B-to-B UI foil Keyboard Conn.
2.8V
~4V
AVILMA
PWRONX


B-to-B Main PWB
CONN_COAX(49:0)
Flex cable
CONN_UPPER(29:0)
B-to-B LID PWB
CONN_lower(20:0)
Display connector
Display connector
B-to-B Main PWB
CONN_lower(20:0)
Displays
B-to-B UI foil Keyboard connector
Hall Sensor
EL foil driver
X2400
B-to-B Main PWB
Keyboard conn.
CONN_KEYBOARD(23:0)
Keyboard
Power on switch
GND
UI-foil
Board to Board Connector LID PWB
B-to-B Main PWB
CONN_UPPER(29:0)
X3551
KEYB_CMT(20:0)
BTB_UI(5:0)
BTB_AUDIO(8:0)
H_BRIDGE(3:0)
BTB_CAMERA(31:0)
VCAM_1V8
VCAM_1V5
VCAM_2V8
GND
X3552
X3553
X3554
Media keys
Ambient light sensor
Earpeace/ Upper IHF
Front camera connector.
Vibra
UI-board


DC Converter
AHNEUS
AVILMA
VCTCXO
38,4MHz
Power amplifier GSM
Antenna switch
Power amplifier WCDMA
WCDMA SMPS
RAP3GS
BTHFM
SLOWAD (1:0)
TXC_CONV(1:0)
RFCONV(11:0)
RFCTRL(8:0)
RFCLK(1:0)
LPRFCLK_I
R7810
X7800
R7800
R7801
C7801
X7801
L7802
8nZH
L7803
15nH
X7802
X7803
X7804
X7805
GND
R2900
R2901
R2902
R2903
R2904
R2905
R2906
R2907
RXIP
RXIN
RXQP
RXQN
TXQN
TXQP
TXIP
TXIN
Iref1
VrefP
12
13
14
15
16
17
18


1) 32.768kHz at B2200
2) SLEEPClk at J2217
3) RFCLK at J2800 / J2801
4) CBUSClk at J2206
5) CBUSDATA at J2207
6) CBUSENX at J2209
7) TXCCLK at J2210
8) TXCCTRL at J2211
9) TXCDATA at J2212
10) AUDIOCLK at J2200
11) SMPSCLK at J2308
12) TXIQ at R2904 - R2907
13) RXIQ at R2900 - R2904
14) TXC at R2908
15) GSM1800 RX at L7501
16) GSM900 TX at R7521
17) WCDMA TX at Z7541
18) WCDMA RX at T7580


VXO=2.5V
Vbat=~4V
VSIM2=3V
VSIM1=3V/1.8V
VANA=2.8V
VRCP=4.75V
12.55V if lights on
VAUX=2.8V
VCORE=1.35V/1.05V
VIO=1.8V
VR1=2.5V
VRFC=1.8V
VDRAM=1.8V
VOUT=2.5V
VCAM=1.8V


BSI
GND
VBATT

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **B** | | C2811 | H8 | C7524 | G5 | J3102 | H8 | N2200 | I5 | R3410 | N4 |
| B2200 | J5 | C2812 | J8 | C7525 | G5 | J3103 | H7 | N2300 | I2 | R3411 | M6 |
| **C** | | C2813 | H6 | C7543 | F3 | J3104 | I7 | N2301 | H3 | R3412 | N6 |
| C2000 | O9 | C2814 | H7 | C7544 | F2 | J3105 | I7 | N2600 | F9 | R3413 | N6 |
| C2002 | Q8 | C2815 | H8 | C7545 | F2 | J3110 | I8 | N3300 | O7 | R3417 | N3 |
| C2003 | O9 | C2816 | H6 | C7547 | F2 | J3111 | J8 | N3301 | K3 | R3418 | M4 |
| C2004 | P8 | C2817 | H8 | C7548 | F2 | J3112 | I7 | N3400 | N5 | R3419 | L3 |
| C2005 | Q8 | C2818 | J6 | C7549 | F3 | J3113 | I7 | N3401 | L4 | R4801 | D6 |
| C2006 | P8 | C2819 | H8 | C7550 | F2 | J3114 | J7 | N3402 | K4 | R4803 | D6 |
| C2007 | Q8 | C2820 | I8 | C7553 | E3 | J3115 | I7 | N4800 | E3 | R4804 | F2 |
| C2008 | Q7 | C2821 | J7 | C7580 | G8 | J3116 | I7 | N4801 | E2 | R4805 | E2 |
| C2009 | Q7 | C2822 | H6 | C7581 | G8 | J3117 | I7 | N6050 | M3 | R6002 | M2 |
| C2012 | O9 | C2823 | J8 | C7582 | G9 | J3118 | H7 | N7505 | F8 | R6005 | O8 |
| C2013 | P7 | C3100 | J8 | C7583 | G8 | J3119 | H7 | N7520 | F5 | R7501 | F8 |
| C2014 | O7 | C3300 | O7 | C7586 | G7 | J3120 | I7 | N7540 | E2 | R7502 | G8 |
| C2070 | N2 | C3302 | O7 | C7587 | F7 | J3400 | I6 | N7541 | G2 | R7503 | G7 |
| C2106 | F9 | C3303 | O8 | C7590 | E6 | J3412 | L4 | N7590 | E6 | R7509 | E8 |
| C2107 | G9 | C3304 | M8 | C7591 | E6 | J3413 | K4 | **R** | | R7521 | G5 |
| C2111 | G9 | C3305 | N8 | C7801 | C2 | J3418 | H6 | R2001 | O7 | R7522 | F7 |
| C2112 | H9 | C3307 | K2 | **D** | | J3500 | Q9 | R2002 | P7 | R7528 | E5 |
| C2117 | I9 | C3308 | K3 | D2800 | I7 | J6040 | H6 | R2003 | Q8 | R7529 | E5 |
| C2118 | I9 | C3309 | L2 | D2801 | I7 | J6041 | H6 | R2006 | P8 | R7530 | E5 |
| C2119 | I9 | C3310 | K2 | D3400 | L5 | J6042 | I6 | R2007 | P3 | R7541 | G2 |
| C2120 | I9 | C3311 | L2 | D6000 | Q3 | **L** | | R2009 | P3 | R7543 | F2 |
| C2124 | I9 | C3312 | L3 | **F** | | L2001 | Q8 | R2010 | O9 | R7544 | F2 |
| C2126 | I9 | C3400 | M4 | F2000 | Q9 | L2002 | Q7 | R2011 | O7 | R7560 | G3 |
| C2127 | I9 | C3401 | N4 | **G** | | L2003 | P7 | R2060 | I2 | R7800 | D2 |
| C2201 | I5 | C3403 | M5 | G2200 | J4 | L2005 | P7 | R2071 | O8 | R7801 | C2 |
| C2202 | H4 | C3404 | N5 | G7501 | E8 | L2101 | G9 | R2119 | F9 | R7810 | D3 |
| C2203 | I4 | C3406 | O5 | **J** | | L2102 | F9 | R2121 | J9 | **T** | |
| C2205 | I4 | C3407 | O5 | J2005 | P4 | L2103 | F9 | R2124 | J9 | T7502 | E5 |
| C2211 | H5 | C3410 | N6 | J2006 | P3 | L2104 | H9 | R2151 | M7 | T7580 | G6 |
| C2213 | I5 | C3411 | K5 | J2007 | P2 | L2107 | H9 | R2152 | K9 | **V** | |
| C2215 | I5 | C3412 | M6 | J2010 | N7 | L2110 | G9 | R2153 | K9 | V2160 | M7 |
| C2216 | J5 | C3415 | M4 | J2011 | N8 | L2111 | H9 | R2155 | M7 | V3300 | L2 |
| C2217 | I4 | C3416 | N4 | J2012 | N8 | L2202 | H4 | R2160 | M7 | V3301 | M2 |
| C2220 | H4 | C3417 | L4 | J2060 | I3 | L2205 | H4 | R2200 | I4 | **X** | |
| C2222 | H5 | C3418 | L4 | J2200 | I4 | L2211 | N3 | R2210 | K7 | X2001 | Q8 |
| C2225 | J5 | C3419 | K5 | J2201 | H4 | L2212 | O3 | R2211 | K7 | X2002 | Q3 |
| C2226 | H5 | C3420 | K4 | J2202 | I6 | L2301 | H3 | R2212 | I4 | X2061 | Q2 |
| C2227 | I5 | C3421 | K4 | J2203 | I4 | L2302 | H2 | R2300 | J2 | X2070 | O3 |
| C2228 | H5 | C3422 | K4 | J2204 | H7 | L2304 | H3 | R2303 | H3 | X2400 | L7 |
| C2231 | H4 | C3424 | N6 | J2205 | H4 | L2400 | K8 | R2400 | K8 | X2700 | E5 |
| C2232 | H5 | C3425 | N4 | J2206 | I2 | L2401 | L8 | R2401 | H4 | X3300 | N7 |
| C2300 | H3 | C3428 | N6 | J2207 | I4 | L3300 | O7 | R2402 | L8 | X3301 | P3 |
| C2301 | I2 | C3429 | N6 | J2208 | I4 | L3301 | P7 | R2600 | E9 | X3302 | P3 |
| C2302 | I2 | C3500 | Q9 | J2209 | I4 | L3302 | M8 | R2800 | I6 | X3500 | M8 |
| C2303 | J2 | C3501 | N8 | J2210 | I5 | L3303 | K2 | R2801 | H7 | X4800 | E4 |
| C2304 | I2 | C3502 | N8 | J2211 | I4 | L3400 | M4 | R2802 | H7 | X6000 | O8 |
| C2307 | J3 | C3503 | O8 | J2212 | I5 | L3401 | M4 | R2803 | J6 | X6001 | O7 |
| C2309 | H3 | C3504 | O8 | J2213 | J7 | L3402 | K5 | R2804 | J8 | X7800 | D3 |
| C2312 | J3 | C3505 | P8 | J2214 | I6 | L3403 | L4 | R2900 | J8 | X7801 | C3 |
| C2314 | I3 | C4800 | F3 | J2215 | I4 | L3404 | M4 | R2901 | J8 | X7802 | C2 |
| C2405 | K9 | C4801 | E3 | J2216 | I2 | L3405 | N4 | R2902 | J8 | X7803 | Q7 |
| C2406 | K9 | C4803 | E3 | J2217 | J2 | L3500 | Q8 | R2903 | J8 | X7804 | O3 |
| C2407 | L8 | C4805 | E6 | J2218 | J5 | L7500 | F7 | R2904 | I8 | X7805 | Q2 |
| C2408 | L8 | C4806 | E2 | J2219 | J3 | L7501 | F7 | R2905 | I8 | **Z** | |
| C2409 | M8 | C4807 | F2 | J2220 | I4 | L7502 | E7 | R2906 | H8 | Z2000 | P8 |
| C2600 | E9 | C4808 | E2 | J2221 | I4 | L7503 | G7 | R2907 | H8 | Z2001 | P4 |
| C2601 | E9 | C6000 | P3 | J2230 | J7 | L7506 | E8 | R2908 | J5 | Z2002 | Q8 |
| C2602 | E9 | C6001 | P3 | J2300 | I4 | L7510 | E4 | R3300 | J6 | Z2100 | I4 |
| C2700 | F6 | C6003 | P4 | J2301 | J2 | L7526 | G6 | R3301 | J7 | Z2403 | J9 |
| C2701 | F6 | C6004 | P4 | J2302 | J3 | L7540 | G3 | R3303 | L2 | Z2404 | K7 |
| C2702 | E6 | C6005 | Q2 | J2305 | I3 | L7550 | F2 | R3304 | L3 | Z2405 | K7 |
| C2703 | E6 | C6006 | P3 | J2306 | J2 | L7588 | E7 | R3305 | L3 | Z2406 | K7 |
| C2704 | E3 | C6050 | M2 | J2307 | J2 | L7589 | E7 | R3308 | L2 | Z4800 | E3 |
| C2800 | I6 | C6051 | M3 | J2308 | J2 | L7590 | E6 | R3310 | L3 | Z7501 | F6 |
| C2801 | H8 | C6052 | M3 | J2700 | G6 | L7591 | G2 | R3311 | L2 | Z7503 | F6 |
| C2802 | H6 | C7500 | F8 | J2701 | G4 | L7592 | E6 | R3312 | L3 | Z7504 | F7 |
| C2803 | H8 | C7507 | E7 | J2702 | G5 | L7802 | C2 | R3313 | M2 | Z7521 | E5 |
| C2804 | H8 | C7513 | F8 | J2703 | G5 | L7803 | C2 | R3314 | M2 | Z7540 | E3 |
| C2805 | H6 | C7518 | G7 | J2704 | G4 | **N** | | R3315 | L2 | Z7541 | F3 |
| C2806 | I8 | C7519 | F8 | J2800 | I9 | N2000 | Q8 | R3320 | O8 | Z7580 | G6 |
| C2807 | J7 | C7520 | F8 | J2801 | I8 | N2001 | P8 | R3401 | N4 | Z7582 | E7 |
| C2808 | I8 | C7521 | G4 | J2803 | J2 | N2101 | H9 | R3405 | M5 | | |
| C2809 | J6 | C7522 | F6 | J3100 | I8 | N2160 | M7 | R3408 | N4 | | |
| C2810 | J6 | C7523 | E4 | J3101 | H8 | N2161 | M7 | R3409 | N4 | | |

